



NatureSpace Licensing Schemes: Monitoring Results (2019-2024)

JANUARY 2025



This report highlights the conservation outcomes of six years of habitat creation and restoration by the Newt Conservation Partnership (NCP) for NatureSpace's great crested newt District and Organisational Licence schemes.

Great crested newts have been recorded at 84% of mature (64% of all) NCP compensation sites and in 70% of mature (40% of all) ponds created or restored. Thus, our pond occupancy rates substantially exceed national and regional averages. Wider monitoring shows that new populations of rare plants and priority species are also rapidly colonising our clean water ponds.

Our monitoring clearly demonstrates that the creation of high-quality habitat by NCP is providing new havens for great crested newt populations and other freshwater wildlife. Overall, the NatureSpace schemes are making an important and long-term contribution to amphibian conservation and nature recovery.

MONITORING PROGRAMME AIMS



Great Crested Newt Benefits

Monitor great crested newt colonisation of created or restored habitats, assess habitat quality, and gather data for FCS evaluation.

NATURAL ENGLAND

Regulatory Compliance

Adhere to Natural England's guidelines to ensure scheme compliance.



Regional Occupancy Trends

Assess great crested newt presence and pond quality in pre-existing ponds.



Wider Biodiversity Benefits

Collect additional biological and environmental data to assess the wider biodiversity benefits of the schemes.

FIELD METHODS



eDNA

Environmental DNA (eDNA) is DNA that is released by organisms into the environment. It can be used to detect the presence of great crested newts in ponds.



Population Size Class Assessment

Survey methods include bottle trapping and torching. Used to assess population status of great crested newts.



HSI

The Habitat Suitability Index is a numerical index which represents the potential of a habitat to support great crested newts.



Wetland Plant Surveys

Assess wetland plant diversity and priority status of ponds using the standardised National Pond Survey method.

OUTCOMES

- 1** Great crested newt occupancy rates for NCP compensation ponds greatly exceed regional and national averages.
- 2** The exceptional site occupancy rate for 'mature' (4-6 years old) NCP compensation sites demonstrates the success of NCP's spatial strategy in promoting natural dispersal and local population expansion.
- 3** The positive relationship between pond age and great crested newt occupancy confirms NCP's consistent delivery of high-quality habitat.
- 4** NCP's ponds, even at this early stage, have already attracted a wide range of regionally and nationally rare plant species, with a growing number of records each year.

Introduction

This is the sixth monitoring report of the Newt Conservation Partnership (NCP), the delivery body for NatureSpace’s (NSP) District Licence and Organisational Licence schemes.

The Newt Conservation Partnership is a community-benefit society set up specifically to create and restore high-quality aquatic and terrestrial habitat for great crested newts and compensate for habitat lost or degraded by development. We are the delivery body for NSP’s licensing schemes. The schemes are an alternative to standard licensing routes and are regulated by Natural England. Our work is underpinned by expert knowledge from partners Amphibian and Reptile Conservation and Freshwater Habitats Trust, who set best practice for the conservation of amphibians and ponds.

Our main objective is to achieve an improvement in the conservation status of great crested newt in the regions we operate (Fig. 2, overleaf). Since great crested newts spend most of their lifecycle on land we ensure that our sites are located in habitats such as woodland and rough grassland, or are extensions of existing networks of ponds already well connected by hedges or patches of semi-natural habitats.

The habitat we create or restore is maintained and funded for the long-term through legally-binding 25-year agreements with landowners. Our experienced team is always on hand to provide advice and

practical management support so landowners can continue to enjoy their new wildlife habitat as it matures.

This document summarises the results of our extensive annual monitoring programme, including all compensation habitat created or restored from 2018 to 2023. We share our data and our findings with the regulator, local planning authorities, landowners, local record centres, and partner organisations to support regional and national great crested newt and freshwater conservation.

NSP funds all of our work, including habitat delivery, management and monitoring, through developer fees. The scheme does not use any form of grant support nor any taxpayer funding.

For more information about the NatureSpace great crested newt compensation schemes please visit: naturespaceuk.com



To access previous monitoring reports please visit: www.newtpartnership.org.uk

Fig. 1. One of three new clean water ponds in Hampshire, on a wildlife-friendly smallholding.



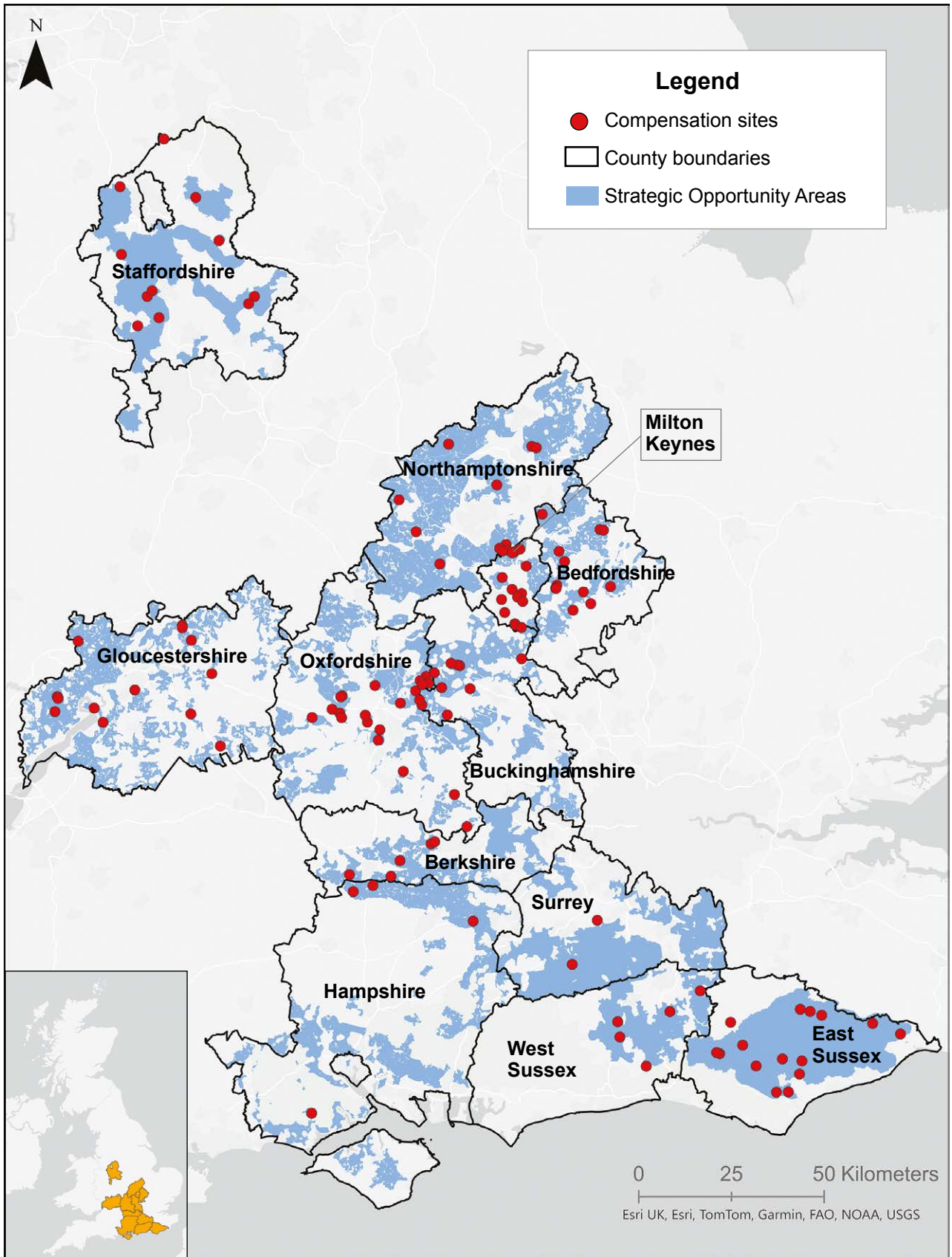


Fig. 2. Map of NCP compensation sites created under the NSP District Licence Scheme between 2018 and 2024, showing Strategic Opportunity Areas (SOAs). It is a licence requirement that at least 60% of NCP compensation ponds are located in SOAs. Some regions have fewer compensation sites than others because some local planning authorities joined the scheme more recently.

Compensation Sites Progress

NSP District Licence Scheme

Between February 2018 and December 2024, NCP created or restored 485 ponds (NCP compensation ponds) at 149 compensation sites across participating local planning authorities. Pond creation is our key conservation activity (Fig. 4) because we want to increase the density of ponds in the landscape to address historic pond losses. New ponds can also be located and designed to maximise conservation benefits, such as ensuring they are free from pollution, creating new clean water habitats for great crested newt and other freshwater wildlife.

Aquatic habitat (pond) compensation

A fundamental principle of the NatureSpace schemes is to have a net positive impact on great crested newt populations within our operational region. For each occupied pond lost to development, we create or restore at least four compensation ponds, resulting in a 4:1 gain to loss ratio. We also create two ponds for every degraded great crested newt pond, i.e. a 2:1 ratio. We are well ahead of development impacts (Fig. 5) with 457 ponds created or restored compared to the 178 ponds compensation requirement. Overall, we have provided 279 ponds over and above what is currently required to compensate for development.

This means that we always stay ahead of development impacts, that new habitat has time to establish before it is allocated for compensation, and that compensation ponds are always ready and available to developers when they choose to enter the scheme.



Fig. 3. NCP organises training events for their contractors to ensure that they understand best practice pond design for wildlife.

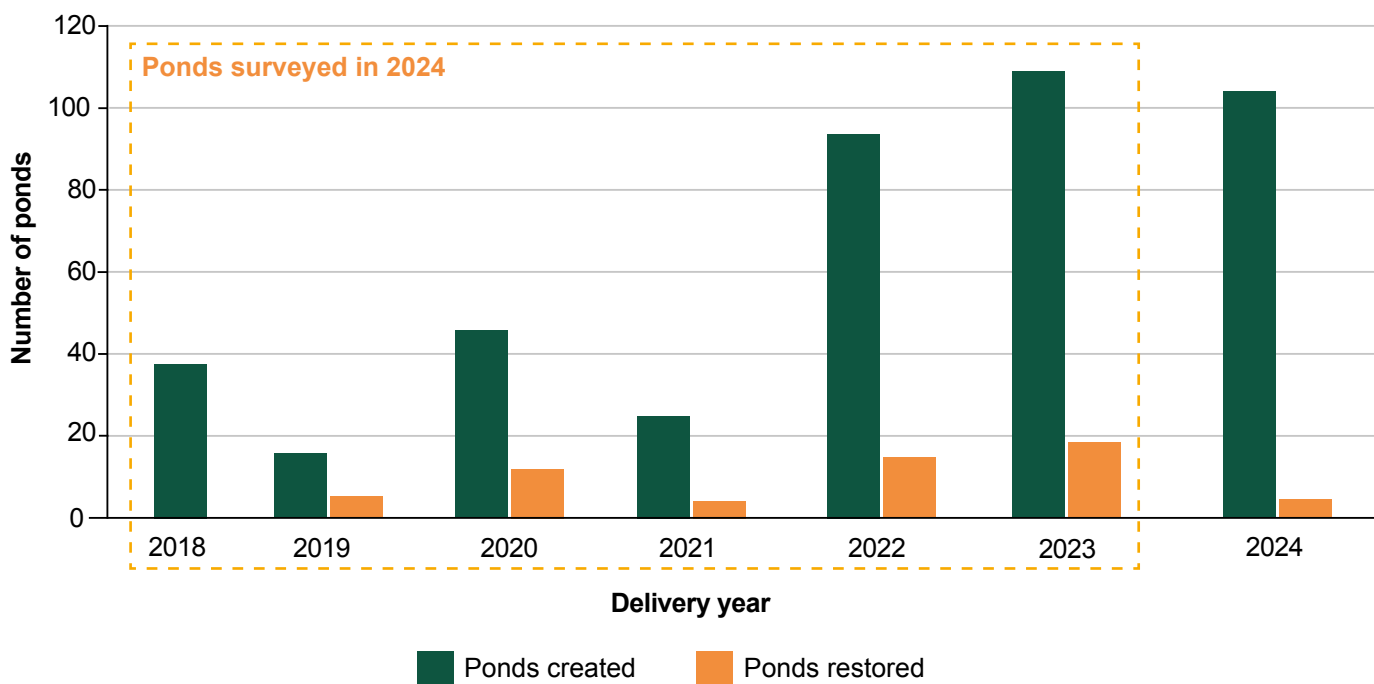


Fig. 4. The number of NCP compensation ponds created and restored annually from April 2018 to December 2024. All ponds created or restored between 2018 and 2023 were surveyed during the 2024 monitoring season.

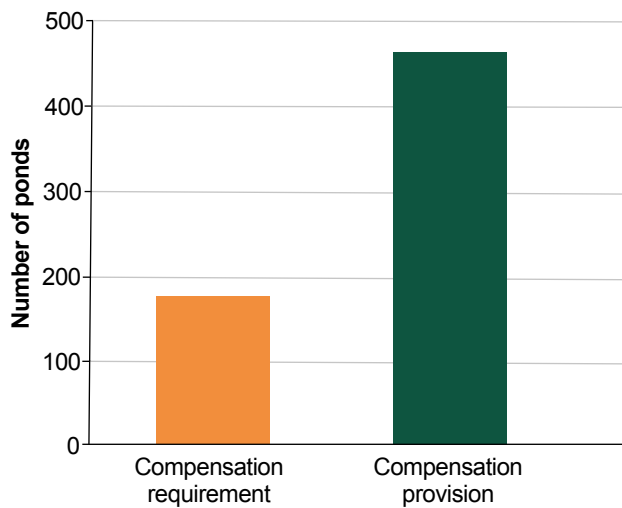


Fig. 5. Aquatic habitat (pond) compensation and requirement up to December 2024.

The pond failure rate¹ for NCP compensation ponds is very low at 3%, reflecting best practice delivery by the experienced NCP team. A key benefit of NSP’s schemes is that they provide funding for extensive site investigations before pond creation or restoration, and for addressing issues that may arise after pond delivery, helping to make failures rare. Where failures do occur, this is usually linked to the presence of agricultural drains which, even with extensive site investigations, can be difficult to locate and remove.

Terrestrial habitat compensation

NSP’s schemes are also designed to ensure that the impacts of development on great crested newt terrestrial habitats are compensated for properly. This is important because great crested newts spend much of their lifecycle on land. NCP provides compensation for terrestrial habitat loss or damage at a 1:1 ratio and, as with aquatic habitat, we are well ahead of impacts for terrestrial habitat compensation (Fig. 6). Up to December 2024, we have provided 1,410 hectares

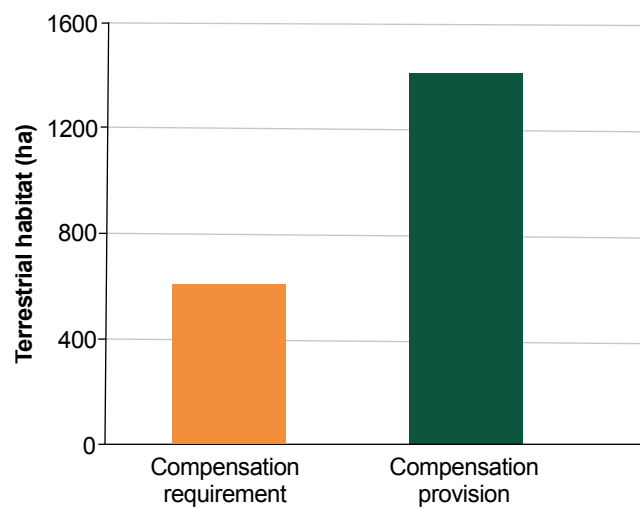


Fig. 6. Terrestrial habitat compensation and requirement up to December 2024.

of new terrestrial habitat suitable for great crested newt against a compensation requirement of 604 ha.

Network Rail Scheme

In May 2022, an Organisational Licence, the first of its kind in the UK, was secured by NSP for one of four Network Rail regions in England. As of 2024, the whole of England is included in the Network Rail Scheme allowing Network Rail to address the impact of infrastructure upgrades and maintenance on great crested newt.

The scheme is still relatively new, so the current compensation requirement is modest. We have provided 20 ponds against a compensation requirement of 8 ponds. For terrestrial habitat, we have provided 81 hectares of new habitat for great crested newts, exceeding the 18 hectares of compensation required by the scheme. A case study of one of the Network Rail compensation sites, Boothby Wildland, is presented below (see Case study 3 on page 17).

Fig. 7. Enhancing landscape connectivity – here a new hedgerow in Oxfordshire is planted with native species and protected from deer and livestock by fencing.



Monitoring Aims

Since 2018, NCP has implemented an extensive monitoring programme with the following aims:

- **Ensuring regulatory compliance:** Provide evidence to the regulator, Natural England, that all licensing requirements are met.
- **Assessing benefits for great crested newts:** Monitor the colonisation of compensation habitat by great crested newts, assess habitat quality, and provide data for Favourable Conservation Status (FCS) evaluation.
- **Identifying regional occupancy trends:** Investigate great crested newt presence and the quality of pre-existing ponds in the landscape. The objective is to evaluate the performance of NCP compensation ponds against regional trends in great crested newt occupancy.
- **Evaluating wider benefits to biodiversity:** Collect biological and environmental data to provide evidence of the positive impacts of the NatureSpace schemes on freshwater habitats and species, and ecosystem services.

Monitoring Methods



Fig. 8. In 2024 the annual monitoring training for NCP project officers included torch surveys at Woorgreen in Gloucestershire (see case study on page 15).

Environmental DNA

Environmental DNA (eDNA) refers to genetic material shed by organisms in their environment. eDNA surveys involve collecting, isolating, and identifying this genetic material to determine the presence of great crested newts². All ponds are sampled annually for great crested newt eDNA during May and June starting in the year following creation or restoration.

Habitat Suitability Index

The Habitat Suitability Index³ (HSI) is a numerical index which represents the potential of aquatic and terrestrial habitat to support great crested newts. The HSI categories for habitat quality (Poor, Below Average, Average, Good, Excellent) are those used by Natural England. In general, ponds with higher HSI scores are more likely to support great crested newts than those with lower scores. This is a useful index but ponds with a low score may also support newts, as shown by recent research which reported that great crested newt can be present in 20% of ponds with a Poor score⁴.



Fig. 9. This restored ghost pond is already a priority pond only three years after restoration, based on its wetland plant community.

Population assessment

In addition to using eDNA and undertaking HSI assessments, we monitor a small selection of compensation sites to measure the impact of habitat creation on local newt populations. At each site, we carry out egg searches, bottle trapping, and night torch surveys of both NCP compensation ponds and pre-existing ponds within a 500-metre radius to count individual great crested newts. To date, we have conducted population assessment surveys at 12 compensation sites across nine counties. Population assessment surveys⁵ are repeated every three years to build a long-term dataset, so the results will be presented in future reports, when we have enough data to identify trends.

Wetland plant surveys

The Newt Conservation Partnership uses the National Pond Survey method⁶ to collect physical, chemical and biological data from a selection of NCP compensation ponds. These standardised surveys enable the evaluation of pond ecological quality using the PSYM method⁷, as well as species richness and rarity measures for biodiversity assessments.

Priority pond assessment

Priority habitats are those identified as the most threatened and requiring conservation action in England⁸. All ponds are assessed using the standard priority pond criteria⁹. Our priority pond assessment integrates data from NCP's monitoring programme, including great crested newt eDNA, wetland plant surveys, and anecdotal records.

Monitoring Results

To date, great crested newts have been recorded at 84% of mature (64% of all) NCP compensation sites and in 70% of mature (40% of all) NCP compensation ponds. NCP compensation ponds consistently show higher great crested newt occupancy rates than existing ponds, both regionally and nationally.

High occupancy rates for NCP compensation sites delivered early in the scheme clearly demonstrate the effectiveness of the NatureSpace schemes' spatial strategy. Targeted habitat delivery is guided by the great crested newt habitat suitability model and we prioritise locations in Strategic Opportunity Areas (SOAs). Monitoring results also show the scheme is providing conservation benefits at regional and national scales. Most NCP compensation ponds are still relatively new (only one to two years old), so we expect occupancy to increase as ponds continue to mature.

Great crested newt pond occupancy for 2024

A total of 366 NCP compensation ponds created or restored up to December 2023 were surveyed for great crested newt presence during spring 2024. At the pond level, we recorded 33% great crested newt occupancy which aligns with previous years' results (Fig. 11).

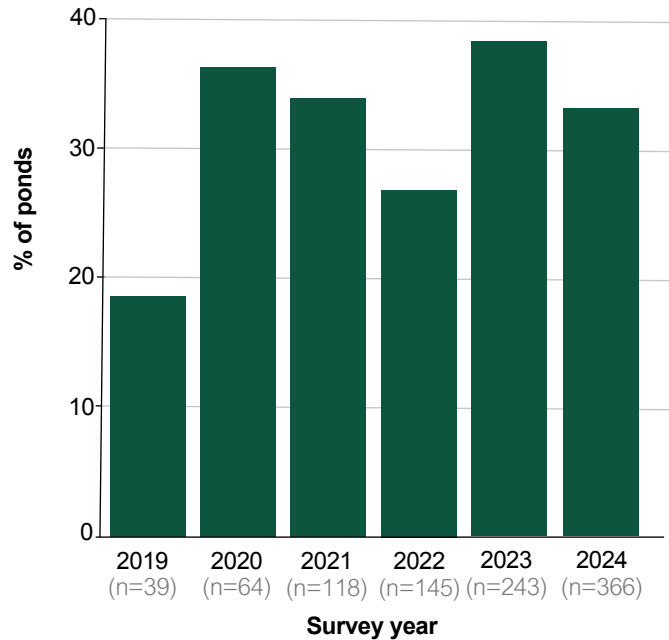


Fig. 11. Great crested newt occupancy in NCP compensation ponds by survey year. The relatively low occupancy rate in 2022 is likely to be due to drought. In brackets: number of ponds per year.



Fig. 10. Great crested newt and smooth newt captured during population assessment.

The age of compensation ponds is an important factor influencing their ecological function. Given that 62% of NCP compensation ponds were only created or restored between one and two years prior to monitoring (Fig. 12, overleaf), the occupancy rate is very high. Pond occupancy is expected to rise as these waterbodies become better established. For example, after a few years, ponds will have more vegetation suitable for egg-laying by great crested newts. It is also more likely that older ponds will be found by great crested newts dispersing naturally from existing populations.

Multi-year great crested newt occupancy (2019-2024)

Great crested newt presence in individual ponds can change year on year depending on weather conditions and natural metapopulation dynamics, as demonstrated by the long-running national PondNet¹⁰ monitoring programme. Therefore, the analysis of occupancy results over a longer monitoring period is a more reliable indicator of occupancy than the annual 'snapshot' survey.

Since monitoring began, great crested newts have been recorded at least once in 40% of NCP compensation ponds. This is excellent considering a large proportion of compensation ponds are still relatively young (see next section).

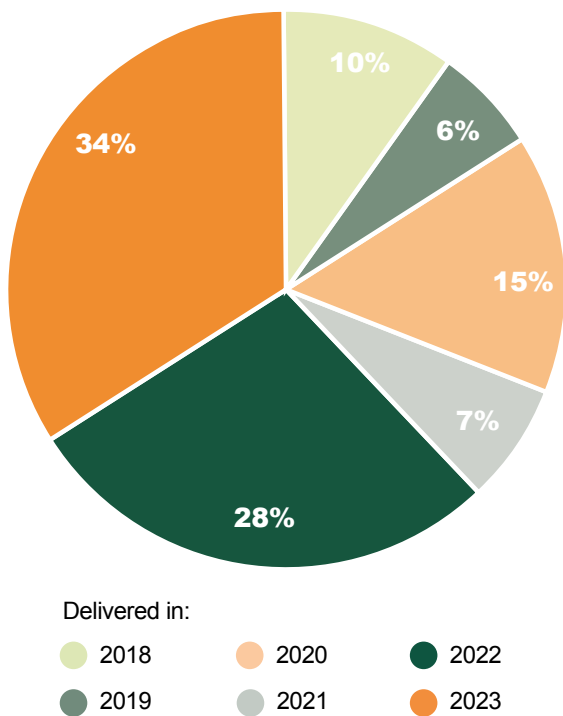


Fig. 12. Percentage of NCP compensation ponds created or restored annually from 2018 to 2023 and monitored in 2024, showing that 62% are between one and two years old.

Multi-year pond-level occupancy in relation to pond age

Pond colonisation by both animals and plants is influenced by many factors such as proximity to existing populations, landscape connectivity, local environmental conditions and time since habitat was created or restored, i.e. pond age. As a pond matures, wetland plant communities develop, providing egg-laying sites for breeding great crested newts in spring. Because colonisation processes have an element of randomness, older ponds are also more likely to be found by great crested newts during their terrestrial phase.

This is shown by the analysis of great crested newt occupancy in relation to pond age. As expected, three- to six-year-old compensation ponds are far more likely to be occupied by great crested newts than younger ponds, with occupancy rates of between 62% and 95% (Fig. 13). As the newer ponds mature over time, it is expected that they will naturally become colonised by great crested newts and occupancy rates will increase.

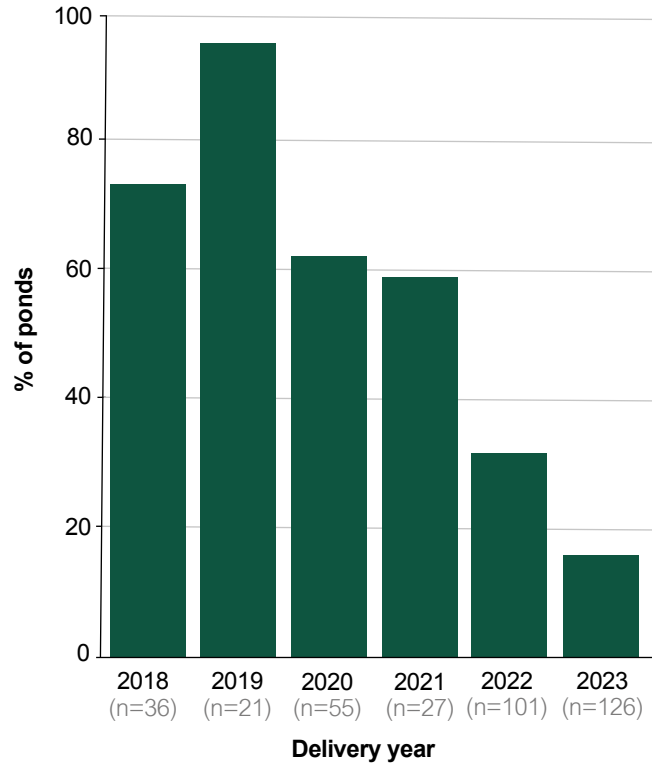


Fig. 13. Proportion of NCP compensation ponds with at least one great crested newt record, by year of creation or restoration (multi-year occupancy). In brackets: number of ponds per year.

Multi-year site-level occupancy in relation to pond age

The metapopulation dynamics of great crested newts are complex and some ponds are only occupied in some years, depending on weather conditions but also on the size of the local population. To take account of this natural variability in pond-level occupancy, we analysed site-level occupancy for all 115 compensation sites surveyed in 2024. The number of ponds in each compensation site ranged from 1 to 12 ponds. By accounting for natural



Fig. 14. Underbelly of a great crested newt captured during population assessment training – each newt has a unique pattern.

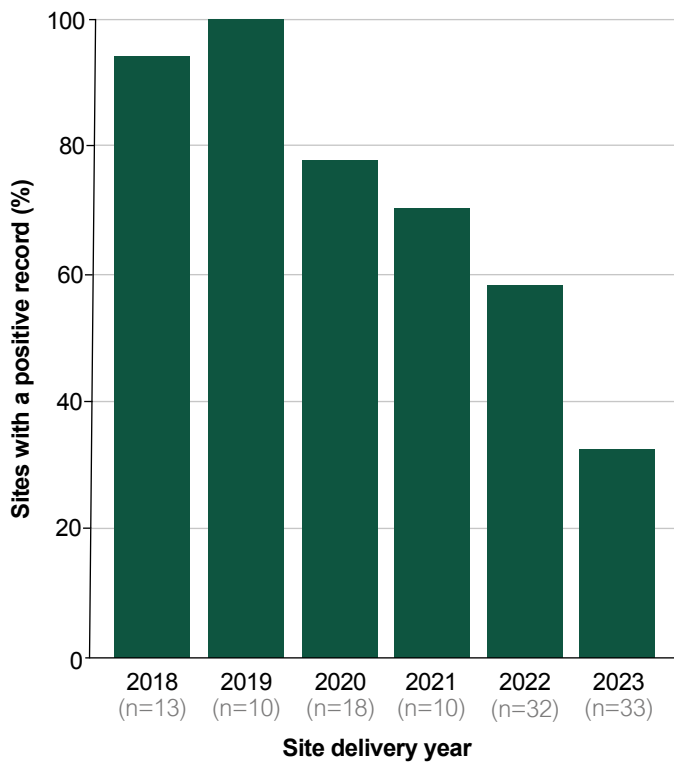


Fig. 15. Proportion of NCP compensation sites with at least one great crested newt record, by year of creation or restoration (multi-year occupancy). In brackets: number of sites per year.

fluctuations in pond occupancy between years, site-level occupancy results provide a good measure of the success of our compensation sites in delivering conservation benefits for great crested newts.

Overall, 64% of compensation sites have been occupied by great crested newts at least once in the past six years (Fig. 15). The exceptionally high site-level occupancy for older sites, such as the 100% occupancy rate for compensation sites delivered in 2019, clearly demonstrates the effectiveness of the NatureSpace schemes' spatial strategy which facilitates natural species dispersal and the expansion of local populations.

By prioritising the creation of pond clusters or pond networks, NCP maximises both conservation benefits and cost-effectiveness. Ponds in clusters are created with a range of surface area, depths and bank angles, and support a diverse range of plant and animal species. For great crested newts, pond clusters and networks can support healthy metapopulations, enhancing the long-term viability of local populations.

Habitat Suitability Index (HSI)

In addition to occupancy data, we assessed the Habitat Suitability Index (HSI) for great crested newt in all NCP compensation ponds. In 2024, 88% of ponds surveyed were categorised as Good or Excellent (Fig. 16). When analysing the HSI category for each pond we found that 92% had achieved Good or Excellent at least once, a notable increase from the previous year (83%). This increase is likely due to the older ponds maturing and plant communities developing, providing improved breeding habitat for great crested newts.

Only nine ponds fall into the category of having Below Average HSI and this is because they were dry at the time of survey, or they are impacted by wildfowl or have experienced disturbance by dogs. NCP works with landowners to address these issues and ponds are not counted as compensation provision if they remain unsuitable as habitat for great crested newts beyond 4 years as per licence requirements.

Overall, the very high proportion of ponds rated Good or Excellent according to the HSI scores reflects our high standards in terms of compensation site selection and the application of best practice principles for pond creation and restoration, as set by our partners Amphibian and Reptile Conservation and Freshwater Habitats Trust.

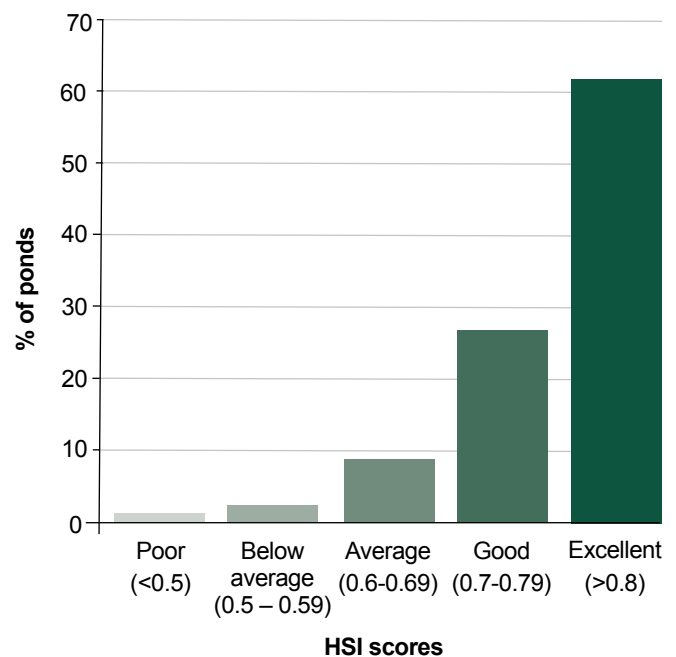


Fig. 16. HSI categories for NCP compensation ponds monitored in 2024. Ponds with a Good or Excellent HSI provide better quality habitats than ponds with poorer scores.

Landscape-scale Monitoring

Landscape-scale monitoring shows that NCP compensation ponds are more likely to support great crested newts than wider countryside ponds. This is because our work is underpinned by a spatial strategy and we work to best practice principles to provide high-quality habitat specifically for great crested newt.

The key objective of landscape-scale monitoring is to provide data on pre-existing ponds in the wider landscape against which we can evaluate the results of NCP compensation pond monitoring. Landscape-scale monitoring also gives critical information on natural inter-annual variation in great crested newt occupancy, providing useful context for the interpretation of other NCP monitoring results. The survey methodology is also compatible with those of the great crested newt national PondNet monitoring programme, allowing both landscape pond and NCP compensation pond data to be interpreted against a national context.

Landscape-scale monitoring is carried out annually in 40 x 1 km grid squares across the South Midlands¹¹. In these set squares, all the ponds are surveyed using eDNA to assess great crested newt occupancy, and HSI scores are used to evaluate habitat quality. Data analysis consists of a comparison between the NCP compensation ponds located in this area (138 ponds) and the pre-existing 'landscape-scale' ponds (174 ponds).

Results show that great crested newt occupancy in the South Midlands landscape-scale ponds were almost twice the national average reported by PondNet, confirming that the South Midlands is a hotspot for great crested newt in England (Fig. 17).

NCP compensation ponds returned an even better average occupancy, with 37% of ponds occupied compared with 25% in the South Midlands landscape-scale ponds (Fig. 18) and provide better quality habitat for great crested newts than landscape-scale ponds. Indeed, 88% of NCP compensation ponds achieved Good or Excellent HSI, compared to only 37% of landscape-scale ponds (Fig.19).

These results confirm that NCP develops and implements habitat restoration or creation on the ground *specifically* for great crested newts. In contrast, the wider landscape contains a broader range of pond types, including some which are not suitable for great crested newts, e.g. very small ponds or fish ponds. Wider countryside ponds are also more likely to be polluted or subjected to other stressors that reduce pond suitability for great crested newt than NCP compensation ponds. Typically, in the wider countryside, 80% of ponds are affected by pollution¹². For NCP, ensuring a clean water source for compensation ponds is one of the key criteria for site selection. NCP also targets compensation site locations to connect and expand existing great crested newt populations. Overall, these results show that much can be achieved on the ground, in a relatively short time, when a group of experts deliver habitat using best practice principles supported by a sound spatial strategy.

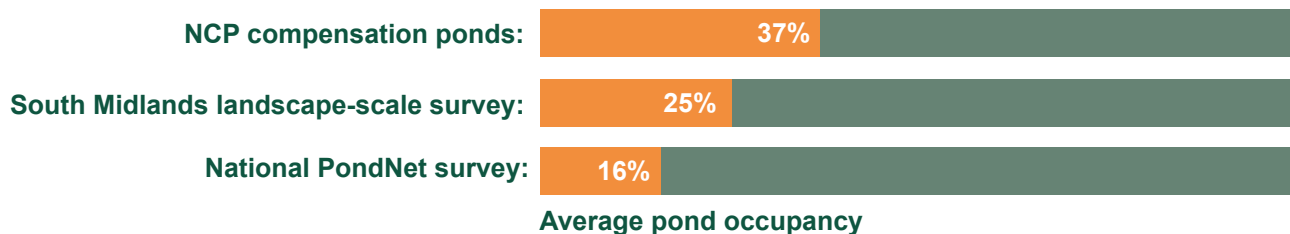


Fig. 17. Great crested newt average pond occupancy results for NCP compensation ponds, the regional South Midlands landscape-scale survey and the national PondNet survey. PondNet pond occupancy average is based on the 2015-2024 results.

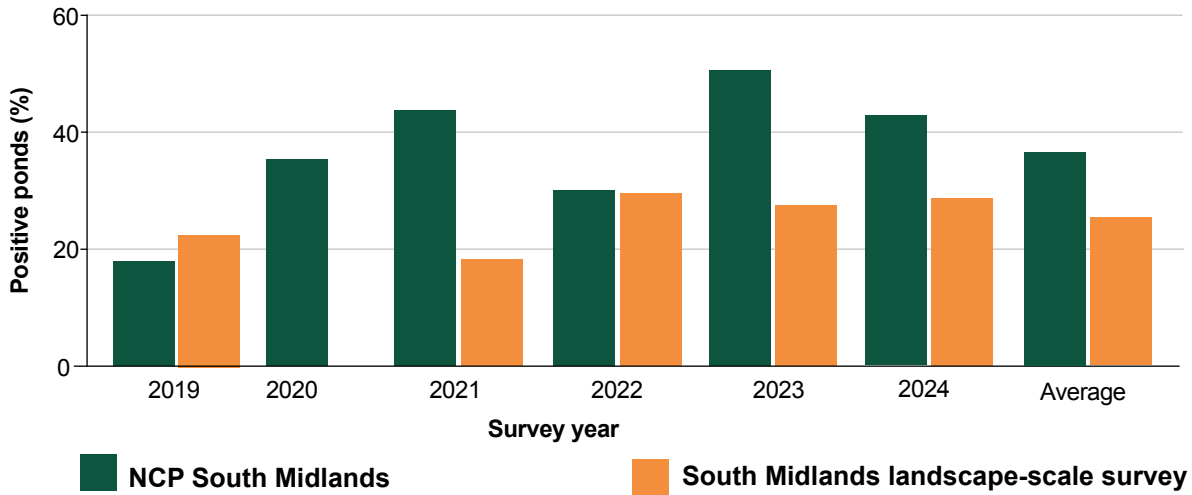


Fig. 18. Great crested newt occupancy in NCP South Midlands compensation ponds and South Midlands landscape-scale ponds surveyed from 2019-2024. Note for the NCP compensation ponds, the data have been adjusted to remove cluster bias following the NARRS methodology¹³. The South Midlands landscape-scale survey did not take place in 2020 because of the COVID-19 pandemic.

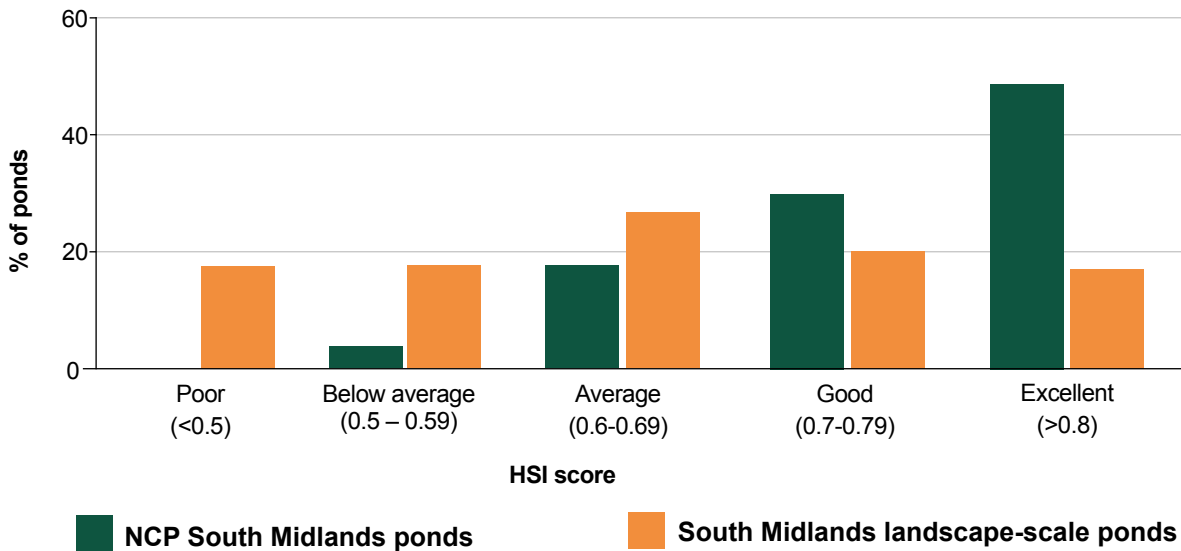


Fig. 19. Comparison of HSI scores for NCP compensation and South Midlands landscape-scale ponds for 2024.

Fig. 20. Two of five new clean water ponds created in Berkshire in 2024, providing new stepping stone habitat and increasing the heterogeneity of the landscape on this estate.



CASE STUDY:

Yardley Chase SSSI area

LPA: West Northamptonshire and Milton Keynes

Number of compensation sites: 7

Number of ponds: 40

Land use: Agriculture

This case study illustrates NCP’s landscape-scale work with multiple landowners around an important SSSI freshwater habitat and species. This allows populations of great crested newt and other freshwater wildlife to expand out, back into the wider countryside.

The landscape surrounding Yardley Chase Site of Special Scientific Interest (SSSI) in Northamptonshire is a focus for habitat delivery for NCP because it is in a Strategic Opportunity Area for great crested newt. The scheme has now delivered 40 ponds here, compensating for impacts in West Northamptonshire and Milton Keynes local planning authorities.

Yardley Chase covers approximately 350 hectares across two distinct areas of the Yardley-Whittlewood Ridge National Character Area, comprising woodland, meadows and ponds. The majority of the ponds are a legacy and unintended consequence of the site’s military use. Clay excavated during the construction of ammunition bunkers resulted in horseshoe-shaped moat-like ponds being created around the buildings. What remains is a network of 80+ clean water ponds, home to numerous species of plants and animals, some nationally or regionally rare. The richness of this special site is maintained by clean water, due to the non-intensive land use, and sympathetic management by the site’s owners.



Fig. 21. Joint visit with members of the Natural England District Level Licensing team at one of the NCP compensation sites around Yardley Chase. This is a demonstration site for best practice habitat creation for great crested newt.

In 2020, the NCP began engaging with surrounding landowners, resulting in the delivery of seven sites on private farmland between 2020 and 2023 with 40 new clean water ponds. Great crested newts have now colonised six of these compensation sites (Fig. 23). The remaining, uncolonised site is less than 18 months old, so it is still very young. Of the 40 ponds, great crested newts have been detected in 20 through

Fig. 22. One of eight clean water ponds at one of the NCP compensation sites around Yardley Chase SSSI. The site already supports a new breeding population of great crested newt and also red pondweed, a Vulnerable plant species in England.



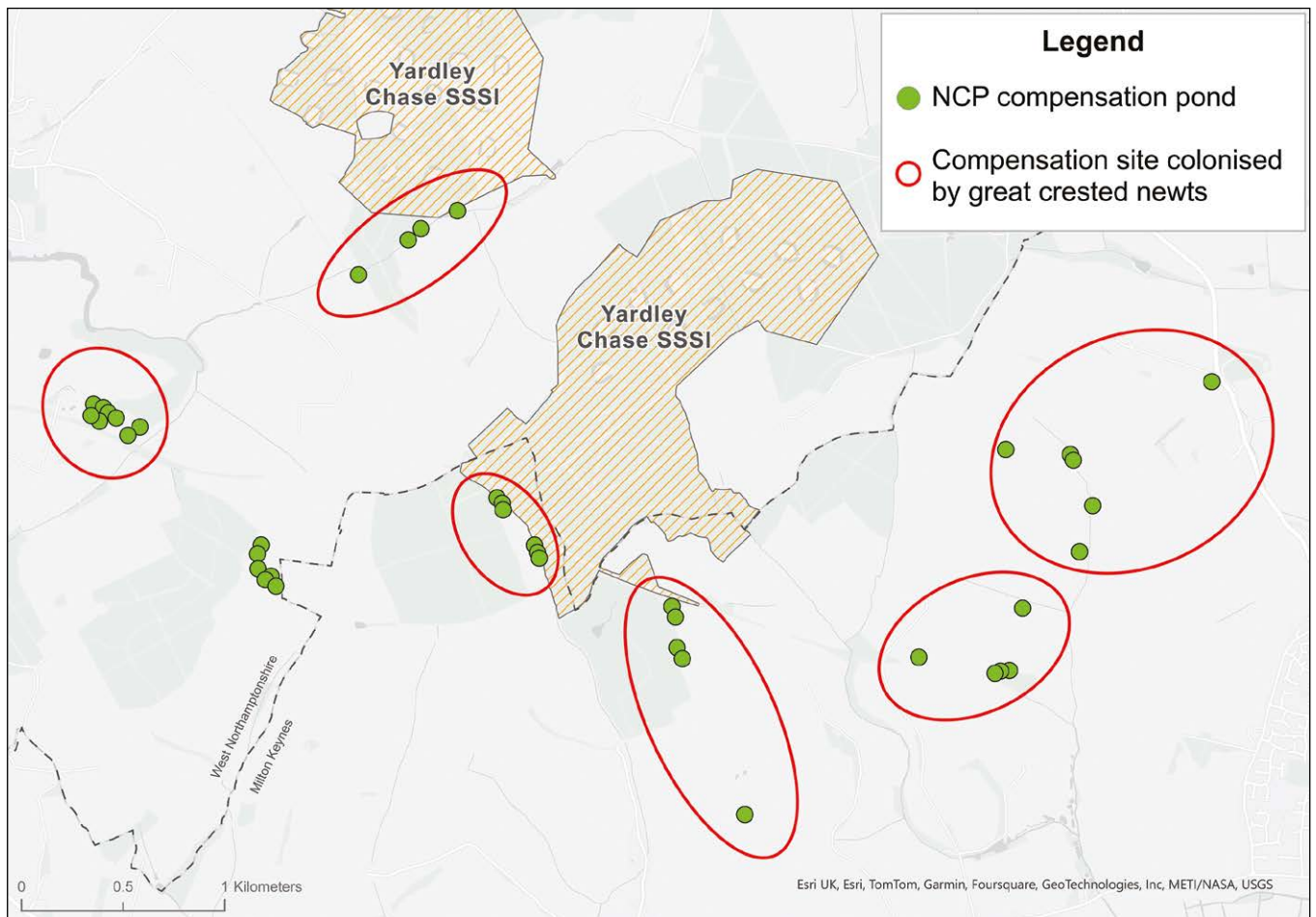


Fig. 23. Compensation sites and ponds around Yardley Chase SSSI illustrating NCP's work with multiple landowners to expand out from designated sites. All but one site created very recently has been colonised by great crested newt, and three ponds support red pondweed, a Vulnerable species in England.

NCP's annual monitoring. The monitoring results clearly demonstrate that the habitat creation is allowing great crested newts to disperse and thrive beyond the designated site boundary, out into the wider landscape.

In addition to great crested newts, the nationally-rare red pondweed (*Potamogeton alpinus*) has also been recorded at two compensation sites. This Vulnerable species first appeared in one pond in 2023, then two additional ponds in 2024, resulting in three ponds now being colonised. Prior to the creation of the ponds, the only modern-day record of red pondweed in Northamptonshire was from Yardley Chase¹⁷ SSSI. Of the 40 ponds created, just over half already qualify as priority ponds, contributing to the local recovery strategy.

This work provides evidence of rare species spreading out from high-quality designated sites into the wider farmed landscape and demonstrates the value of targeting conservation work around freshwater biodiversity 'hotspots', working with multiple landowners, to restore nature.



Fig. 24. Site visit with our partner NSP at an NCP compensation site to showcase best practice pond design principles, including wide shallows and a rough finish.

CASE STUDY:

Woorgreens & Crabtree Hill

LPA: Forest of Dean
District Council

**Number of compensation
sites:** 4

Number of ponds: 10

Land use: Forestry

A case study showcasing how partnership working over many years and multiple projects can create a haven for freshwater wildlife. This site now has many high-quality clean water ponds created over two decades, providing a wide range of habitats for both aquatic and terrestrial plants and animals.

The pondscape at Woorgreens Lake Nature Reserve in the Forest of Dean is especially diverse. A former royal hunting forest, the Forest of Dean has a strong tradition of mining and timber production. However, since the middle of the twentieth century, mining activity has largely ceased. The features left behind from this activity have gradually been colonised by nature, and Woorgreens Nature Reserve is one of those former industrial sites which is now thriving in biodiversity.

When coal mining ceased at the site in 1981, the old open cast mine was flooded to form a seven-hectare lake, which became occupied by bottom-feeding fish and so is not a good habitat for great crested newts. This lake formed the original nature reserve, which has now expanded to cover more than 50 hectares. The site provides a range of habitats, including wet heath, scrub, woodland and wetland (predominately a network of ditches, and the lake) and is known to be locally important



Fig. 25. Wetland plant surveys at NCP compensation ponds have revealed a diverse plant community, including rare species.



Fig. 26. One of the four ponds created by NCP in 2020. These ponds already support breeding populations of great crested newt and common toad, both priority species.

for great crested newts, reptiles, butterflies and birds. Forestry England (the landowner) and Gloucestershire Wildlife Trust (the tenants on part of the site) are both keen to maximise the freshwater biodiversity value of the site. Various phases of pond creation have been undertaken over the years (Fig. 27) to increase the diversity of habitats:

- **2012:** A network of 14 new ponds was created using funding from the Million Ponds Project. The new ponds were a mixture of permanent and temporary ponds of relatively small sizes.
- **2019:** NCP created one new pond on Crabtree Hill, on an area in the process of being restored to mire by the Forester's Forest project¹⁸. This pond also provides a watering hole for the livestock on site for conservation grazing.
- **2020:** NCP created a complex of four large, permanent to semi-permanent ponds in an area of clear-felled forestry plantation. Whilst on site, the contractor also created two smaller ponds for Forester's Forest, so this is a complex of six ponds from large (>1,000 m²) to small (c. 100 m²).
- **2020:** An additional pond was created on Crabtree Hill by NCP.
- **2024:** Four more ponds were created near the existing complex by NCP specifically for great crested newts. These ponds have been designed to be different to those already on site, including some shallower ponds to encourage occasional drying, to extend the range of pond types at the site.

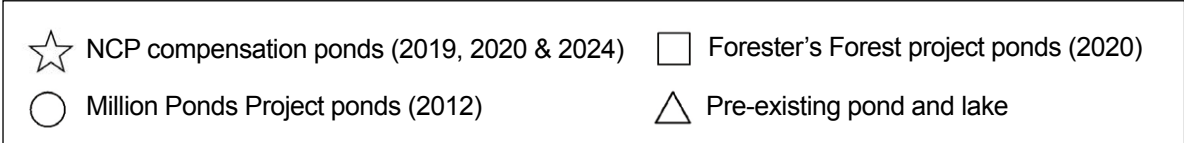
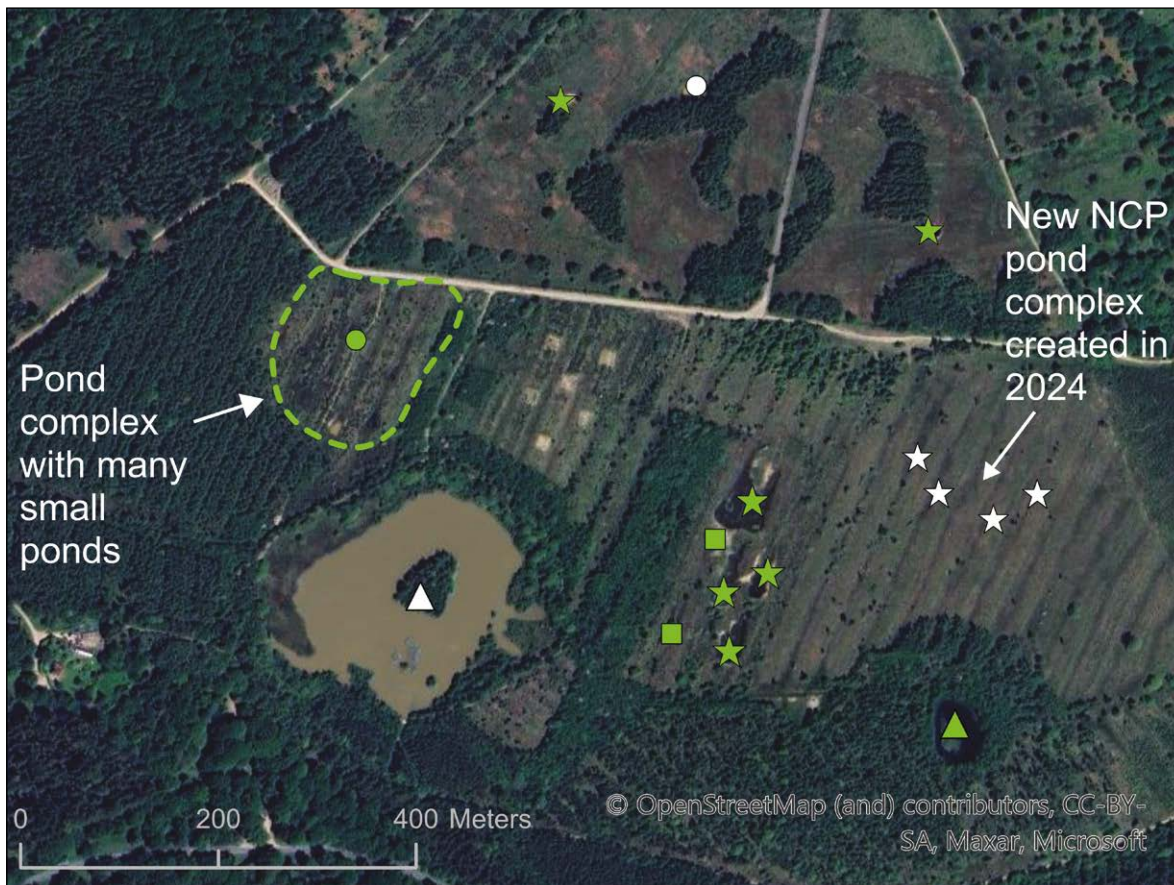


Fig. 27. Woorgreens Lake Nature Reserve features a diverse pondscape, with 26 clean water ponds created or restored by NCP or partner organisations over the past 12 years. Ponds are varied in terms of surface area, water permanence and age, providing excellent opportunities for freshwater wildlife to thrive, including great crested newt. Ponds where great crested newt have been recorded are shown in green.

The large complex of ponds created in 2020 has been a huge success. All four ponds are being used by great crested newts, with evidence that the species is breeding successfully. Being large, sunny ponds, they are also very popular with common toads. This pond complex is especially rich in aquatic plants supporting two Near Threatened (marsh pennywort *Hydrocotyle vulgaris* and marsh St John's-wort *Hypericum elodes*) and one Vulnerable plant species (lesser spearwort *Ranunculus flammula*). In 2023, translucent stonewort (*Nitella translucens*) was recorded in the largest pond, the first time this species has been recorded in Gloucestershire¹⁹. In fact, this pond is the most botanically diverse of all 170 NCP ponds surveyed for plants to date, with 39 wetland plant species recorded.

The pair of ponds at Crabtree Hill provides a strong contrast. These ponds were built in an area of wet heath/mire on a naturally acidic substrate, compared to the complex of four ponds built on clays disturbed by mining. Both ponds on Crabtree Hill have been far slower to colonise with vegetation, potentially due to

higher livestock disturbance and lower pH. This may explain why great crested newts were only recorded in these ponds once so far, in 2023. Both our results and PondNet surveys show that 2023 was a good year for the species, allowing them to expand their range to new ponds. As these ponds develop richer plant communities, it is hoped that great crested newts will use them more frequently, improving connectivity to populations at the northern edge of the site. Although ponds may not be occupied every year, a variety of terrestrial habitats and ponds provides an important resource for great crested newts.

Looking to the future, we hope that the newest ponds created in 2024 will help to extend the range of both great crested newts and threatened plants found on the site. We will work closely with Forestry England to identify suitable opportunities to create additional ponds, improving landscape-scale connectivity and the sustainability of new plant and amphibian populations at Woorgreens.

CASE STUDY:

Boothby Wildland

This case study presents an NCP compensation site for the Network Rail organisational licence and demonstrates the potential for high-quality habitat creation and restoration through collaboration with rewilders.

Boothby Wildland, a 617 hectare former arable farm in Lincolnshire, was purchased by Nattergal in 2021 and is being rewilded so that nature can be restored, following lessons learnt from the Knepp Estate in East Sussex. In 2023, NCP secured a small part of this large landholding under a 25-year agreement to compensate for Network Rail impacts on great crested newt in this region. The compensation site comprises 5.4 hectares of terrestrial habitat which was previously intensively managed arable land, five new clean water ponds and a restored pond. As per best practice, the ponds were designed so that they have a range of surface areas (from about 100 to over 1,000 m²) and depths (from about 1 to 1.5 m). Pond complexes with different pond types support a greater diversity of freshwater plants and animals. If some of the smaller and shallower ponds dry out in a drought year, then this is beneficial

LPA: Lincolnshire, Network Rail Eastern region

Number of ponds:
5 created, 1 restored

Land use: Rewilding (ex-arable)

for great crested newts because it reduces predation for a while, boosting their population.

As is often the case in intensively managed agricultural landscapes, very little was known about the wildlife of the existing ponds at Boothby and there were no known great crested newt populations in the area. Over recent decades, many of the ponds on the farm have been filled in, reducing connectivity and the extent of freshwater habitats in the landscape.

Our NCP project officer carried out walkovers, visiting all the remaining ponds on the estate to assess their ecological status and the potential to create or restore additional waterbodies. As can be expected, most of the ponds had poor wetland plant diversity and water quality, but there were some good surprises. The lovely opposite-leaved pondweed (*Groenlandia densa*), a

Fig. 28. Four new clean water ponds at Boothby Wildland in an ex-arable field adjacent to mature woodland. Great crested newts were recorded in two of these ponds less than a year after creation.





Fig. 29. Pond creation in progress at Boothby Wildland in February 2023. We like to keep digger track marks – see foreground – in and around our ponds as this creates microhabitats for all sorts of wildlife. We leave the finishing to weathering by rain, wind and frost, so our ponds eventually have a more natural look.

Vulnerable species, was seen at one pond, and great crested newt eggs were found at another pond in an arable field, confirming their presence on the farm. This pond was located near one of the few relatively large areas of semi-natural woodland in the landscape, and this is likely the reason why great crested newts continued to use this pond for breeding, retreating to their woodland refuge during their terrestrial phase.

Working closely with the Nattergal team, the NCP project officer drew up plans for a new pond complex with four waterbodies between the woodland and the pond which supported great crested newts, to provide additional breeding habitat. Another new pond was created in the adjacent ex-arable field, and a small late succession pond which was silted up and partly filled in with rubbish was restored.

The work on the ground took place in winter 2023, and already in 2024 great crested newts were recorded in three of the six compensation ponds. Two of these ponds were new ponds and one was the restored pond. What was arable land around the ponds is

going through the rewilding process, becoming rough grassland providing good cover for the newts on their short but potentially dangerous travels from the woodland to their breeding ponds.

Great crested newts clearly took advantage of the new high-quality habitat very quickly at Boothby Wildland. As other clean water waterbodies are created or restored by the Nattergal team as part of the rewilding of Boothby Wildland, the newts and the other plants and animals living in or associated with ponds will be able to once again thrive in this landscape.

For more information about Nattergal and Boothby Wildland, visit: www.nattergal.co.uk



See a short NatureSpace video on the Network Rail scheme

Wider Benefits of the NatureSpace Schemes

NCP delivers high-quality aquatic habitat, benefiting great crested newts as well as other freshwater and wetland plants and animals. Nationally and regionally rare plant species have been recorded in our new and restored ponds, and this trend is increasing year on year. Overall, 130 (53%) ponds created or restored have reached priority habitat status¹⁴ based on available data, illustrating the contribution NSP's schemes are making to nature recovery.

To better understand the contribution of the schemes to restore nature, we assessed the priority status of NCP compensation ponds using NCP-generated great crested newt data, wetland plants survey data at selected sites, and anecdotal records collected by our delivery team during site visits. It is the second year that NCP is reporting on the priority status of our new or restored ponds, and again the results are very positive, particularly considering the young age of many of the compensation ponds, as noted in previous sections.

Wetland plants

This year, we expanded the wetland plant survey to include a selection of 115 NCP compensation ponds with a range of ages and characteristics (31% of NCP compensation ponds). The survey work was carried out by our partner, Freshwater Habitats Trust. We largely focused the survey in three areas where NCP has clusters of compensation sites (Forest of Dean, Yardley Chase SSSI area, and Oxfordshire-Buckinghamshire borders), but also included other sites at various stages of maturity.

The standardised PSYM method was used to assess the ecological quality of these ponds. Overall, 75% of the NCP compensation ponds surveyed achieved the highest 'Good' rating on the PSYM scale (Fig. 30). If we remove one-year-old ponds from the analysis, then 83% have 'Good' status, similar to last year's survey. These excellent results contrast sharply with those of the Countryside Survey¹⁵, where only 8% of ponds in the 'wider countryside' were of 'Good' quality. NCP uses best practice criteria for site selection and on-site delivery, providing new clean water habitats which are quickly colonised by wetland plants.

Plant diversity in NCP compensation ponds averaged 17 species and ranged from three to 39 species (Fig. 31). This is a very positive result considering the average number of wetland plant species in wider countryside ponds in England is very low, at only seven species. Despite the greater proportion of very young ponds included in the survey this year, the average number of plants per pond is slightly greater than last year's.

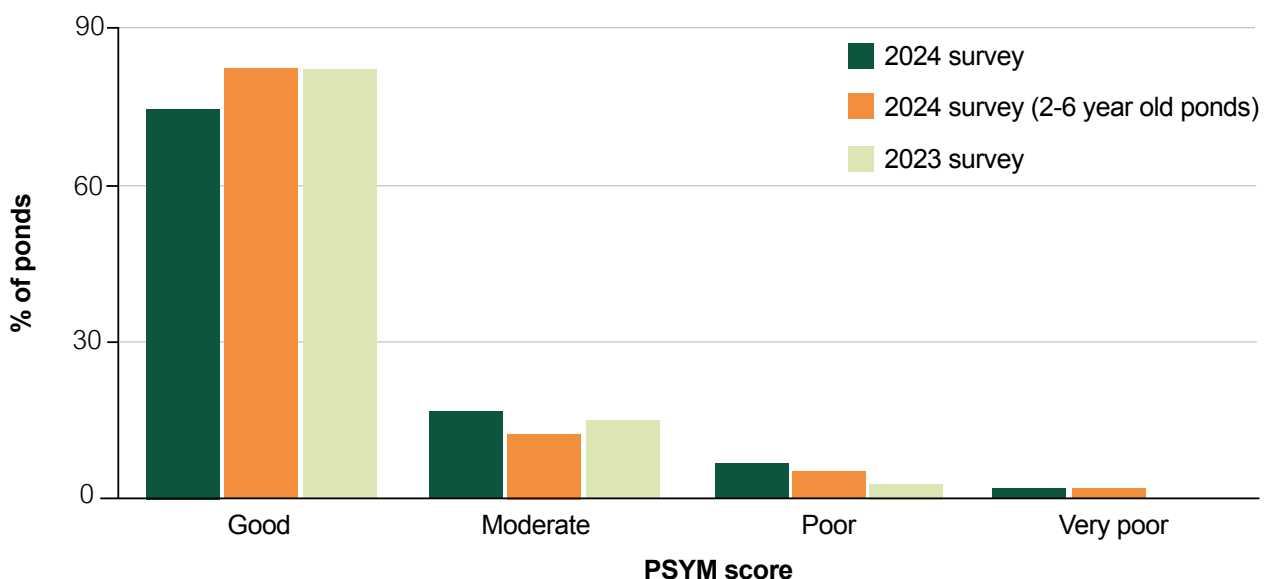


Fig. 30. PSYM analysis results for NCP compensation ponds for 2023 and 2024, and for NCP compensation ponds which are 2-6 years old, i.e. excluding 1-year-old ponds. Note that PSYM score cannot be calculated for dry ponds.

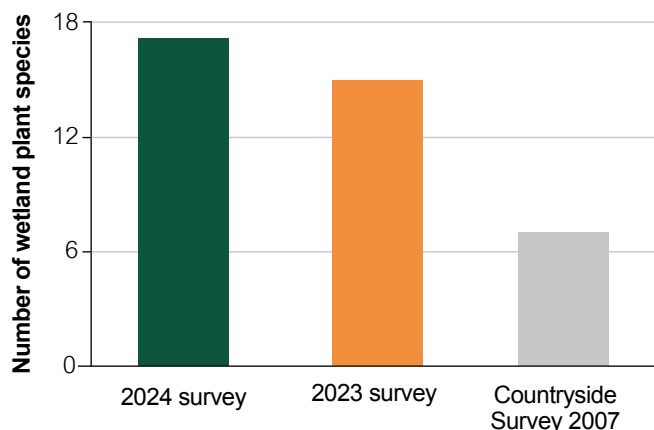


Fig. 31. Average species richness of NCP compensation ponds in the 2023 and 2024 survey, and for the Countryside Survey in 2007.

The number of records for uncommon plants in NCP compensation ponds is increasing, illustrating the crucial value of new clean ponds for expanding populations of declining species. By locating new habitat near designated or high-quality sites, we can help these special species disperse back into the wider countryside. This is shown in the Yardley Chase SSSI case study (page 13).

Overall, five species classed as Vulnerable on the IUCN Red List of Threatened Species have been recorded at NCP compensation ponds. Red pondweed (*Potamogeton alpinus*), first recorded in one pond in 2023, is now recorded in three NCP compensation ponds. It is very likely the source population is in Yardley Chase SSSI because it is the only site in the area with existing records for this species (see case study 1 on page 13). There is one additional



Fig. 32. Toad (strings) and frog spawn (clumps) in a one-year-old compensation pond in Surrey. Many NCP ponds provide new breeding habitat for common toad, a priority species.



Fig. 33. Water-violet (*Hottonia palustris*), a Vulnerable species in England, appeared at a restored NCP compensation pond in Sussex.

new NCP compensation pond which supports lesser water-plantain (*Baldellia ranunculoides*) at a Wildlife Trust reserve in Oxfordshire, where it is county-rare. One plant was originally recorded in 2022, while there were 12 plants in this year's survey, suggesting the population is sustainable. It sometimes takes time for rare plants to colonise new ponds from nearby populations. For example, it took five years for the Vulnerable tubular water-dropwort (*Oenanthe fistulosa*) to finally colonise an NCP compensation pond from an old farm pond located in the same field, only about two hundred meters away. Lesser spearwort (*Ranunculus flammula*) was recorded in 17 ponds. This species is still relatively widespread but has seen large declines, hence its Vulnerable status according to IUCN criteria. Water-violet (*Hottonia palustris*) was recorded at a restored pond in Sussex. In this case, it is likely that their seeds survived in the sediment and that restoration work has allowed the species to thrive again.

In addition, three Near Threatened species were recorded for the first time in 2024, as well as the Nationally Scarce clustered stonewort in one new pond in Staffordshire and one restored pond in Milton Keynes. Regionally rare plants were also recorded at many compensation sites, including water-purslane (*Lythrum portula*) at new clean water ponds in Oxfordshire, in semi-natural woodland.

Priority pond assessment

For the priority pond assessment, we analysed the 2024 data from the entire monitoring programme (great crested newt eDNA monitoring, population assessment, wider benefits monitoring, and anecdotal records) to compile a list of ponds meeting at least one of the five priority pond criteria. A total of 159 ponds (43%) have achieved priority habitat status, based on available data (Table 1). Excluding the very young ponds that were only delivered in 2023, 130 ponds (53%) have achieved priority status. This is considerably higher than the proportion of priority ponds in the wider countryside (8%)¹⁶.

It is very encouraging to see that over half of compensation ponds have reached priority habitat status, even at an early stage after they were created or restored. We anticipate this percentage will rise as we continue to gather data on the habitat delivered through the scheme, and great crested newt occupancy rises, particularly at older sites. These results provide additional evidence of the importance of creating or restoring new clean water ponds to provide rapid restoration of freshwater biodiversity.

Table 1. Number of NCP compensation ponds meeting priority pond criteria in 2024 based on available data. Some ponds meet more than one criteria.

Criteria	Description	Number of compensation ponds
Ponds of high ecological quality	Ponds classified in the top PSYM category (PSYM score \geq 75%, Good status)	82
Ponds supporting species of high conservation importance	Ponds with great crested newt, a priority species	120
	Ponds with common toad, a priority species	19
	Ponds with rare or declining wetland plant species according to England Red List (i.e. Near Threatened or Vulnerable status) or Nationally Scarce species of stonewort	25
Ponds with exceptional assemblages of key biotic groups	Ponds supporting \geq 30 wetland plant species	6

Fig. 34. A frog supervising the creation of a new clean water pond in a woodland SSSI in Hampshire.



References

- ¹ A pond is classified as failed when, it is not filling up to a satisfactory level (hydrology issues) or it has not been colonised by great crested newts or reached a HSI score higher than 0.7 within a period of four years. The latter is a licence requirement.
- ² Biggs, J., Ewald, N., Valentini, A., Gaboriaud, C., Dejean, T. & Griffiths, R.A. et al. (2015). Using eDNA to develop a national citizen science-based monitoring programme for the great crested newt (*Triturus cristatus*). *Biological Conservation*, 183, 19-28.
- ³ Oldham, R.S., Keeble, J., Swan, M.J.S. & Jeffcote, M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). *Herpetological Journal*, 10, 143-155.
- ⁴ Buxton, A. S. & Griffiths, R. A. (2022) A revised system for interpreting great crested newt habitat suitability indices. *Herpetological Journal*, 32 (3), 114-119.
- ⁵ Gent, A.H. & Gibson, S.D. (2003). *Herpetofauna Workers Manual*. Peterborough: Joint Nature Conservation Committee.
- ⁶ Biggs, J., Fox, G., Nicolet, P., Walker, D., Whitfield, M. & Williams, P. (1998). *A Guide to the Methods of the National Pond Survey*. Pond Action: Oxford.
- ⁷ PSYM: Predictive Systems for Multimetric method which assesses the ecological quality of ponds and is one of the criteria for priority pond assessment. <https://freshwaterhabitats.org.uk/advice-resources/survey-methods-hub/psym/>
- ⁸ The list of these 'habitats of principal importance', as they are formally referred to in legislation, is mandated in England by the Natural Environment and Rural Communities (NERC) Act 2006.
- ⁹ <https://jncc.gov.uk/our-work/uk-bap-priority-habitats/>
- ¹⁰ <https://freshwaterhabitats.org.uk/projects/pondnet-edna-surveys/>
- ¹¹ The local planning authorities, all located in the South Midlands area, which were the first to join the NatureSpace District Licensing scheme in 2018, are Aylesbury Vale, Bedford Borough, Central Bedfordshire, Milton Keynes, South Oxfordshire, Vale of White Horse and Oxford City.
- ¹² Williams P., Biggs J., Crowe A., Murphy J., Nicolet P., et al. (2010). *Countryside Survey: Ponds Report from 2007*. NERC Centre for Ecology & Hydrology.
- ¹³ To remove cluster bias from our sample, we select the pond located in the bottom left corner of each 1km grid square. This approach follows the methodology of the National Amphibian and Reptile Recording Scheme (NARRS): <https://monitoring.arc-trust.org/pages/narrs>.
- ¹⁴ Priority habitats are those most threatened, and in need of conservation action.
- ¹⁵ Williams P., Biggs J., Crowe A., Murphy J., Nicolet P., et al. (2010). *Countryside Survey: Ponds Report from 2007*. NERC Centre for Ecology & Hydrology.
- ¹⁶ Williams P., Biggs J., Crowe A., Murphy J., Nicolet P., et al. (2010). *Countryside Survey: Ponds Report from 2007*. NERC Centre for Ecology & Hydrology.
- ¹⁷ BSBI, VC32 Northamptonshire Rare Plant Register, 2014 https://bsbi.org/wp-content/uploads/dlm_uploads/VC32_Rare_Plant_Register.pdf.
- ¹⁸ <https://www.forestersforest.uk/>
- ¹⁹ BSBI Atlas 2020 online: <https://plantatlas2020.org/atlas/2cd4p9h.23z5h0>

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The NatureSpace District Licensing Scheme is in operation across: Bedfordshire, Berkshire, Buckinghamshire, East Sussex, Gloucestershire, Hampshire, Milton Keynes, Northamptonshire, Oxfordshire, Staffordshire, Surrey and West Sussex.

naturespaceuk.com/district-licensing/where-we-operate/

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